

REMARKS

I. Status of the Application

Claims 5-19 are pending in this application. In the December 14, 2007 Office action, the examiner rejected claims 5 and 10-16 under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,583,834 to Uchiyama ("Uchiyama"). In addition the examiner rejected claims 6-9 under 35 U.S.C. § 103(a) as allegedly being obvious over Uchiyama as applied to claim 5, in view of U.S. Patent Publication No. 2001/0018230 to Jimarez et al. ("Jimarez"). The examiner has also rejected claims 17-19 under 35 U.S.C. § 103(a) as allegedly being obvious over Uchiyama in view of Jimarez.

In this response, applicants have amended claims 5 and 12. As set forth below, applicants respectfully traverse the examiner's rejection of claims 5-19.

II. The Rejections Under 35 U.S.C. § 102(e) Should Be Withdrawn

In the December 14, 2007 Office action, claims 5 and 10-16 were rejected under 35 U.S.C. 102(e) as being anticipated by Uchiyama. In particular, the Examiner considers Uchiyama to disclose or teach all of the features of claims 5 and 10-16 of the present application. Applicant respectfully submits that each and every element as set forth in claims 5 and 10-16 is not found, either expressly or inherently, in Uchiyama. Thus, the cited reference does not anticipate the claimed invention.

As provided in MPEP § 2131, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628,

631 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ 2d 1913, 1920 (Fed. Cir. 1989). In addition, the elements must be arranged as required by the claim. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

A. **Independent Claims 5 and 12**

Independent claims 5 and 12 respectively call for a method of attaching a flip-chip to a substrate, and a related flip chip assembly. As set forth below, it is respectfully submitted that the Uchiyama reference does not disclose all the limitations of amended claims 5 and 12.

1. *attaching a flip-chip to a substrate*

Independent claim 5 is directed to a method of “attaching a flip-chip to a substrate”. Claim 12 calls for a “flip-chip” and a “substrate”. At page 2 of the December 14, 2007 Office action, the examiner cites Uchiyama as teaching a method of attaching a flip-chip to a substrate. However, Uchiyama does not teach attaching a flip-chip to a substrate. Instead at column 4 line 32-35 Uchiyama relates to “connection between a liquid crystal panel substrate and a semiconductor element and a liquid crystal device obtained by the so called COG (chip on glass) method”. Clearly, COG is not a flip-chip.

Accordingly, Uchiyama does not disclose “the identical invention ... shown in as complete detail as is contained in the ... claim.” Uchiyama simply does not disclose all

the limitations of claims 5 and 12. Therefore, the examiner's rejection of claims 5 and 12 under 35 U.S.C. 102(e) should be withdrawn at least for this reason.

2. *a separate insulating layer of an insulating material on the entire lateral sides of each of the [contacts]*

Amended claim 5 includes the limitation of "forming a separate insulating layer of an insulating material on the entire lateral sides of each of the ... contacts". However, in Uchiyama neither the first adhesive layer 4 nor the second adhesive layer 5 are formed on the entire lateral sides of electrode terminals 12, 22 (see, e.g., Figure 7 of Uchiyama). Instead the first adhesive layer 4, electrically conductive layer 7 and second adhesive layer 5 are formed on a base board or a separator, then placed between the glass substrate and the IC and then thermal compression bonding takes place (see column 4 line 27-47). Clearly there is no disclosure of "forming an insulating layer of an insulating material on the entire lateral sides of each of the [contacts]" as set forth in claim 5.

Similar to claim 5, amended claim 12 includes the limitations of "a first electrically insulating film formed on the entire lateral sides of the first plurality of contacts" and "a second separate electrically insulating film formed on the entire lateral sides of the second plurality of electrical contacts". It is clear in Figure 7 of Uchiyama that a portion of the lateral sides of the electrode terminals 12, 22 are exposed and are not *entirely* covered by the adhesive layers 4 and 5. Because the entire lateral sides of the electrode terminals 12, 22 are not insulated in Uchiyama, it will therefore still be possible for short circuiting to occur between adjacent electrode terminals when the conductive particles are randomly distributed. Therefore, Uchiyama does not disclose an

“electrically insulating film formed on the *entire* lateral sides of the ... contacts”

(emphasis added) as set forth in claim 12.

As set forth above, all limitations of claims 5 and 12 are not disclosed in Uchiyama. Accordingly, it is respectfully submitted that the examiner’s rejection of claims 5 and 12 under 35 U.S.C. 102(e) should be withdrawn for at least this reason.

B. Dependent Claims 10-11 and 13-16

In the December 14, 2007 Office Action, the examiner rejected claims 10-11 and 13-16 under 35 U.S.C. 102 (e) as allegedly being anticipated by Uchiyama. Each of these claims depends from and incorporates all of the limitations of one of claims 5 or 12. As set forth for above, the examiner’s rejection of claims 5 and 12 should be withdrawn. Therefore for at least the same reasons as claim 5 and 12, the examiner’s rejection of dependent claims 10-11 and 13-16 should be withdrawn.

Additional reasons also exist for the allowance of these dependent claims. In particular, additional limitations found in claims 10-11 and 13-16 are not disclosed in Uchiyama.

III. The Rejections Under 35 U.S.C. § 103(a) Should Be Withdrawn

In the December 14, 2007 Office action, the examiner rejected claims 6-9 and 17-19 under 35 U.S.C. § 103(a) as allegedly being obvious and unpatentable over Uchiyama in view of Jimarez. Applicants respectfully traverse the examiner’s rejection of claims 6-9 and 17-19 under 35 U.S.C. § 103(a), as the examiner has not made a *prima facie* case of obviousness as described in MPEP § 2141 - 2143.

A. **Independent Claim 17**

1. **The Examiner Has Not Provided An Explicit Analysis Supporting
a 103 Rejection**

Pursuant to MPEP 2143, “**the key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious.**” Furthermore, “the analysis supporting a rejection under 35 U.S.C. § 103 should be made **explicit**.” MPEP § 2143.

In MPEP § 2141 and § 2143, several exemplary rationales that may support a conclusion of obviousness are provided. However, in the December 14, 2007 Office action, the examiner did not indicate which, if any, of these rationales was being followed. Instead, the examiner simply stated that “it would have been obvious to ... modify the invention of Uchiyama with forming the separate insulating layers on the lateral sides of the contacts of a flip chip and substrate, with the method of Jimarez, so as to remove portions of the insulating layer formed on the contacts with ease.” (See December 14, 2007 Office action, page 6). Applicant fails to see how this conclusory statement serves as support for a finding of obviousness. Without clear articulation of and an explicit analysis for a finding of obviousness, it is respectfully submitted that the examiner’s conclusory statements are mere hindsight. Therefore, it is respectfully submitted that the examiner’s claim rejections under 35 U.S.C. § 103(a) should be withdrawn.

2. **A Prima Facie Case of Obviousness Has Not Been Made**

In order to establish a *prima facie* case of obviousness, three basic criteria should

be met as set forth in MPEP § 2143.01-2143.03. First, there must be some suggestion or motivation to modify the references or combine reference teachings. MPEP § 2143.01. Second, there must be a reasonable expectation of success. MPEP § 2143.02. Third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2143.03

In the present case, neither Uchiyama nor Jimarez teach all the limitations of claim 17. For example, claim 17 includes the limitation of “exposing portions of the layer of photosensitive insulating material which do not overlie the electrical contacts to *electromagnetic irradiation* in order to cure the portions of the layer of photosensitive insulating material which do not overlie the electrical contacts” (emphasis added). In the December 14, 2007 Office action, the examiner did not even mention this “electromagnetic irradiation” limitation of claim 17. Furthermore, it is respectfully submitted that Uchiyama does not disclose the use of an irradiation technique to form an insulating layer on the lateral sides of the substrate contact and exposed the substrate contact. Similarly, Jimarez does not disclose any insulating layer on the substrate contact or any method of exposing a portion of the substrate contact using irradiation technique. Accordingly, neither Uchiyama nor Jimarez, alone or in combination, disclose all the limitations of claim 17, and a prima facie case of obviousness has not been made

In addition to the foregoing, Claim 17 relates to the use of a polishing technique to form a lateral insulating layer on the flip-chip contact and irradiation technique to form a lateral insulating layer on the substrate contact. Neither Uchiyama, Jimarez nor any valid combination thereof teach using chemical mechanical polishing (CMP) to form a lateral insulating layer on the flip-chip contact. In the December 24, 2007 Office action,

the examiner cites paragraph 0059 of Jimarez and takes official notice of the equivalence of grinding and CMP as disclosing this limitation. However, Jimarez discloses using laser ablation to remove a portion from the top surface of the conductive body followed by grinding. There is no disclosure in Jimarez of removing an insulating layer from the flip-chip contact using chemical mechanical polishing. In other words, the grinding in Jimarez does not appear to “expose the ... contacts” as set forth in claim 17. Instead, the contacts in Jimarez are already exposed by the laser ablation. Therefore, Jimarez clearly teaches away from the present invention by using laser ablation to expose the contacts on the flip-chip. Furthermore, the Applicant expressly disagrees with the examiner’s assertion that grinding is equivalent to chemical mechanical polishing, and respectfully traverses the examiner’s “official notice”.

As set forth for above, none of the references of the examiner either alone or a combination teach the use of chemical mechanical polishing on the flip-chip contact or using irradiation on the substrate contact. Accordingly all the limitations of claim 17 are not taught by the cited references. Therefore, a prima facie case of obviousness has not been made, and the examiner’s rejection of claim 17 under 35 U.S.C. § 103(a) should be withdrawn for at least these reasons.

In addition to the above, it is respectfully submitted that in the December 14, 2007, Office action, the examiner did not even try to establish a reasonable expectation of success as required under MPEP § 2143.02. Therefore, for at least this reason, a prima facie case of obviousness has not been made, and the examiner’s rejection of claim 17 should be withdrawn.

Furthermore, it is respectfully submitted that the examiner has not provided a proper suggestion or motivation to modify the references or combine reference teachings as required under MPEP § 2143.01. Instead, in the December 14, 2007 Office action, the examiner simply stated that “it would have been obvious to ... modify the invention of Uchiyama with forming the separate insulating layers on the lateral sides of the contacts of a flip chip and substrate, with the method of Jimarez, so as to remove portions of the insulating layer formed on the contacts with ease.” (See December 14, 2007 Office action, page 6). Is the examiner’s motivation to combine “to remove portions of the insulating layer formed on the contacts with ease”? If so, where is there a suggestion in the art that this motivation exists? It is respectfully submitted that the examiner has not provided a proper suggestion or motivation to modify the references or combine reference teachings as required under MPEP § 2143.01. Therefore, it is respectfully submitted that the examiner’s claim rejections under 35 U.S.C. § 103(a) should be withdrawn.

B. Dependent Claims 6-9 and 18-19

In the December 14, 2007 Office Action, the examiner rejected dependent claims 6-9 and 18-19 under 35 U.S.C. 103(a) as allegedly being anticipated by Uchiyama in view of Jimarez. Each of these claims depends from and incorporates all of the limitations of one of independent claims 5 or 17. As set forth for above, the examiner’s rejection of claims 5 and 17 should be withdrawn. Therefore for at least the same reasons as claim 5 and 17, the examiner’s rejection of dependant claims 6-9 and 18-19 should be withdrawn.

Additional reasons also exist for the allowance of these dependant claims. In particular, additional limitations found in claims 6-9 and 18-19 are not disclosed in Uchiyama or Jimarez.

III. Conclusion

For all of the foregoing reasons, it is respectfully submitted that applicants have made a patentable contribution to the art. Favorable reconsideration and allowance of this application, including claims 5-19, is therefore respectfully requested.

In the event applicant has inadvertently overlooked the need for an extension of time or payment of an additional fee, the applicant conditionally petitions therefore, and authorizes any fee deficiency to be charged to deposit account 13-0014.

Respectfully submitted,



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